in from one and a half to three hours, and at a temperature of about 40° Centigrade. The albumen was converted into peptone, which is not coagulable, and which has the power of ready diffusion through animal membrane. This transformation takes place, according to Kühne, without the intervention of low organisms, and without the production of odour. His experiments on the digestive action of pancreatic juice artificially prepared led Kühne to much the same results. The solution was prepared by macerating the gland in water, and filtering. The artificial juice converts fibrin first into a soluble body, which eventually becomes peptone; this, in its turn, gives rise to leucine, tyrosine, and an extractive matter. If the pancreatic fermentation be continued, basic bodies and fatty acids make their appearance. That these processes take place also in the living animal is proved, says Herr Kühne, by the odour of naphthylamine from the excreta, and by the production of volatile fatty acids in the large intestine.—*Med. Times and Gaz.*, Nov. 2, 1867.

4. *Nutrition.*—Dr. LIONEL BEALE believes that the serum of the blood is the nutritive pabulum of the body; that the red corpuscles are concerned in its distribution and in preventing changes in the composition of the great mass of the blood as certain constituents are removed from or poured into it; that the white corpuscles are masses of germinal matter concerned in the formation of the serum as well as of the red corpuscles; and that the special products of nutrition depend not so much on the characters of the pabulum as upon the *converting* powers of the germinal matter throughout the textures and which *appropriates* from the pabulum the materials it requires. The red corpuscles have therefore assigned to them a secondary position as agents of nutrition. The principal argument in support of this is derived from the fact that elaborate tissues are formed in animals which have no coloured blood corpuscles. According to Beale three distinct phenomena are involved in nutrition. 1. The contact of the soluble pabulum with the germinal matter of the tissues. 2. The separation of the elements of the pabulum from their state of combination. 3. The rearrangement of these elements and the conversion of some of them into new germinal matter.—*Journ. Anat. and Phys.*, Nov. 1867, from *Quarterly Jl. of Miscroscop. Sc.*, July, 1867.

5. *Respiratory Functions.*—PETTENKOFFER and VOIT (*Annalen der Chemie und Pharmacie*, cxli. Heft 3) have undertaken a series of researches in their large respiration apparatus at Münich, with a view to determining to what extent the respiratory functions vary during the day and during the night. Their first experiments were conducted upon a young watchmaker, aged 28 years, and led to a remarkable result, in respect to the difference in the amount of oxygen absorbed and carbonic acid evolved during the day and night periods. The experiments included one day of rest, during which the man amused himself by reading and repairing a small clock, and a day of labour in which he was made to turn a wheel heavily charged. The chief conclusions which may be drawn from these experiments are the following: 1st, That in 24 hours the volume of the CO_2 eliminated is about equal to that of the O absorbed; 2d, That the interchanges of gas effected by respiration go on differently by day and by night, so that the greater part of the O absorption takes place by night and the greater part of the CO_2 elimination by day. Work has scarcely any immediate influence on the oxygen absorbed during the day, although it has a great immediate influence in the amount of CO_2 eliminated. This seems to be formed at the expense of oxygen which has been stored up. 3d. The excretion of urea is not increased by work, although this be long sustained. 4th. The elimination of water is very much increased by work, and the increase continues during the ensuing hours of sleep. Pettenkoffer and Voit have, we believe, since repeated these experiments on the man who was the subject of the above experiments, but without confirming the results as to the difference between the day and night periods.—*Journ. Anat. and Phys.*, Nov. 1857, from *Centralblatt*, No. 31.

6. *Influence of Heat on Muscular Contraction.*—A valuable paper has been laid before the French Academy by M. CHMOUTEVITCH, in which the author shows that heat has a greater effect on the determination of muscular contrac-

tion than is generally supposed. M. Chmoutevitch conducted his experiments on the gastrocnemius of the frog, and has arrived at these conclusions. 1. The mechanical power of the muscle increases up to thirty degree or thirty-three degrees (Centigrade), according to its length and tension. 2. If the temperature be raised above thirty degrees, the power of the muscle diminishes, until, as the temperature becomes higher, a point is arrived at which may be called the zero of work. 3. In experimenting with two muscles which, in all but temperature, are under like conditions, it is found that the one submitted to the higher temperature loses its power of contraction more rapidly than the other. 4. The total work of a muscle (represented by the weight it can sustain) is always greater at a low than at a high temperature. 5. The explanation of the increase of mechanical work during the elevation of temperature is found in this fact, that the elasticity of the muscle increases with the temperature.—*Brit. Med. Journ.*, Oct. 26, 1867.

7. *Gases of Muscular Tissues.*—Dr. L. HERMANN has published a very interesting and suggestive work (*Untersuchungen über den Stoffwechsel der Muskeln,* U. S. Berlin, 1867, p. 128) on the character of the gases of the muscular tissue, and on the interchanges which go on between muscles, separated from the body, and the different gases, in the several conditions of rest, action, and rigor mortis. Amongst the most remarkable of his results are that the gases of muscle are quite free from oxygen, that the respiratory function of muscles which was supposed to exist by George Liebig, Matteucci, and others, is rendered more than doubtful, but that nevertheless when a muscle is thrown into action, or into a state of rigor, there is evolution of carbonic anhydride, which appears to be derived from a carbonic-anhydride generating substance.—*Journ. Anat. and Phys.*, Nov. 1867.

8. *Use of Perchloride of Palladium in Microscopic Investigations.*—Dr. SCHULZE, of Rostock, made a communication on this subject to the section for Anatomy and Physiology of the Association of German Naturalists and Physicians which met in Frankfort in September last. He used a solution of 1 in 800, feebly acidulated with hydrochloric acid. Small pieces of tissue became, by the addition of this substance, as consistent as cheese, within eight days, and minute sections might then be easily made. The sections should then be deprived of water, and might be impregnated with carmine, whereby those parts which were not coloured by perchloride of palladium obtained a red appearanee. By the use of the solution of palladium, the connective and elastic tissue remained uncoloured, hyaline membranes assumed a light yellow hue, cell-formations a darker yellow, and the nerve-marrow a grayish black. The fact that the unstriped muscular fibres (contractile fibre-cells) were coloured yellow by the perchloride, was of great importance, because they might thereby be easily distinguished from the connective tissue. Dr. Schulze had used this agent in his researches on the structure of the ciliary muscle, and found that the circular fibres formed a coherent layer on the whole inner surface of the ciliary body, while the longitudinal fibres formed a similar layer on the outer surface of this body. The anterior point of insertion of the muscle was fixed, the posterior being movable, so that, if a muscular contraction took place, the zonula Zinnii, which, in the elastic tense condition, was inserted on the capsule of the lens, would be deprived of its tension, and a more considerable curve of the lens be brought about.—*Med. Times and Gazette,* Nov. 16, 1867.

MATERIA MEDICA, GENERAL THERAPEUTICS AND PHARMACY.

9. *Bichloride of Methylene as a General Anæsthetic.*—We extract from an extremely interesting lecture by Dr. B. W. RICHARDSON, published in the *Medical Times and Gazette* (Nov. 2, 1867), the following particulars with regard to this new anæsthetic agent.